

## **Group 10**

### **Group Members:**

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### **Topic:**

We propose to create a hand-tracking application which will be able to recognize a hand from a device (like webcam) or a video feed, identify usable and expressive features (such as fingertips), track the movement of these features, and identify certain hand gestures or poses e.g., the sign language alphabet.

### **Objectives/Schedule:**

#### **Week 1 (11/6 – 11/13/2014)**

*Recognize a human hand in a predetermined pose from a still image or video feed.*

Application will correctly recognize the presence of a hand at least 75% of the time on a simple white background. We decided to use a cleaner background so that we can focus on detecting gestures. Tracking/convex hull is still rough, but working. If the recognition requires the better tracking, we may go with better tracking way like skin color.

#### **Week 2 (11/13 – 11/20/2014)**

*Recognize simple hand poses/gestures, e.g., number of fingers held up. This should be a very reasonable goal; by refining/modifying our convex hull code we should be able to do this.*

- a. Application will be able to recognize simple (and unique) hand poses, such as the peace sign, varying numbers of fingers held up, closed fist, etc. We expect this to be possible by modifying our convex hull code from objective 1.

### **Week 3, 4 (11/21/2014 – 12/02/2014)**

*Recognize more complex hand poses/gestures. More of a stretch goal that depends on how well objective 2 is met. Will probably be much more difficult since the movements are more intricate and many may look similar. We are hoping to do this by creating energy images for each gesture, but may also attempt to model hand movements directly if that doesn't work.*

- a. Application will recognize movement from predetermined start pose to a subset of the sign language alphabet (selected for uniqueness and ease of identification). For example, avoid putting two easily-confused symbols in this set (b, d, etc.)
- b. Application will recognize movement from predetermined start pose to sign language alphabet character (using energy images?)